National Measurement & Regulation Office

UK 2930

V(0)a

EC type-approval certificate
UK 2930 Revision 4

Issued by:

The National Measurement and Regulation Office
Notified Body Number 0126

In accordance with the requirements of the Non-automatic Weighing Instruments Regulations 2000 (SI 2000/3236) which implement, in the United Kingdom, Council Directive 2009/23/EC, this EC type-approval certificate has been issued to:

Digi Europe Ltd
Digi House
Rookwood Way
Haverhill
Suffolk, CB9 8DG
United Kingdom

In respect of a Class III non-automatic weighing instrument designated the LI-700E (weight/weight-price labeller) and having the following characteristics:

Maximum capacity (Max)	3 kg	6 kg	10 kg
Minimum capacity (Min)	40 g	40 g	100 g
Scale interval (e =)	2 g	2 g	5 g

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

This revision replaces previous versions of the certificate.

Issue Date: **03 September 2015**
Valid Until: **07 August 2022**
Reference No: **TS1201/0044**

GStones
Technical Manager - Certification Services
For and on behalf of the Chief Executive

UKAS PRODUCT CERTIFICATION
0135

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Descriptive Annex

1 NAME AND TYPE OF INSTRUMENT

This pattern of a non-automatic weighing instrument, designated the LI-700E, operates as a weight or weight/price labeller.

The instrument comprises a self-indicating and price-computing weighing machine with associated thermal label printer.

Pricing, pack and labelling information is stored in files called PLUs selectable by the operator for the commodity or labels being processed.

The instrument provides indications of:

- price per unit weight from £0.01 to £9999.99 per kg by £0.01 intervals
- price-to-pay from £0.01 to £9999.99 by £0.01 intervals (rounded to the nearest 1p, with 0.5p rounded up).

The instrument shall not be used for direct sales to the public.

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

2.1.1 The LI-700E (Figure 1) comprises a weigher and a thermal label printer (labeller). The weigher and labeller are mounted on single fabricated floor standing stainless steel frame on adjustable stainless steel feet.

2.1.2 On the frame are mounted the scale conveyor and any additional in-feed and out-feed conveyors, any number may be used. Various conveyor sizes may also be used. The in-feed and weigh conveyors are disabled in non-automatic mode of operation.

2.1.3 The control cabinet is located behind the conveyors, and houses the electronics and electrical control elements of the instrument as well as the display unit, which consists of a colour LCD touch screen and the PC main board (Figure 2).

2.1.4 The printer mechanism comprises the print head, label feed and applicator. The printer mechanism is mounted on the frame and located above the out-feed conveyor and has adjustable height, lateral and rotational position. It contains the hardware necessary to print, feed and apply self-adhesive labels from a reel. The label application is powered by pneumatics, with a pressure regulator mounted on the frame of the weigher.

2.1.5 Load cell

The load cell is an HBM SP4M C3MR, capacity as per table 4.1.

2.2 Electrical

The LI-700E weigher comprises the following:

- Aplex Technology combined PC and LCD display type AHM-6127A
- Teraoka TPB-03484 A/D converter
- TDK Lambda power supply unit type LS75 and UPS backup type Pico UPS-100

2.3 Devices

The instrument is provided with the following devices:

- Initial zero-setting device (≤ 4 % of Max)
- Semi-automatic zero-setting device (≤ 4 % of Max)
- Zero-tracking device
- Preset tare device
- Semi-automatic tare weighing device (subtractive)
- Zero indication
- Calibration not accessible to user
- Price computation
- PLUs

3 OPERATION

3.1 Switch-on

At switch-on, the instrument performs a standard Windows check to test the integrity of the display. The instrument attempts to set zero provided that it is within a range not exceeding 4 % of its capacity.

3.2 Zero-tracking

Zero-tracking operates provided that the instrument is within a range not exceeding 4% of its capacity.

3.3 Semi-automatic zero setting

The zero key on the touch screen operates provided that the instrument is within a range not exceeding 4 % of its capacity.

3.4 Over- and under-range

If the load is less than gross zero, then the display shows a “-” sign before the value. Indication of negative weights below 20e is prevented.

The load may be shown up to a maximum of nine divisions above Max, above which the weight indications are inhibited.

3.5 Tare / Preset tare

Subtractive tare / preset tare weighing can be performed.

3.6 Printing

Editing of the printed labels format is performed via the “Dr Label” program, its access is restricted to Manager or Supervisor levels. The labels must bear the weight, unit price and price to pay (when applicable), with associated units. Currency units must be in accordance with the country of use.

When tare or preset tare values are printed, they must be identified as such, and Net and/or Gross weights should be clearly identified when printed with a tare value. Net weights do not require such identification when the tare value is not printed.

4 TECHNICAL DATA

4.1 The LI-700E has the following technical characteristics:

Maximum capacity (Max)	3 kg	6 kg	10 kg
Scale interval (e =)	2 g		5 g
Minimum capacity (Min)	≥ 20 e		
Tare (T)	≤ - 50% Max		
Load cell E_{max}	15 kg		20 kg
Temperature range	0 to 40 °C		
Power supply	100-240 V a.c. / 50-60 Hz single phase		
Label applicator pneumatic pressure	4-6 bar		
Accuracy class	III		

4.2 Documentation and drawings

TA-LI700e GA-1-0	LI-700E General arrangement (3 conveyors)
TA-LI700e GA-2-0	LI-700E Scale Base Assembly
TA-LI700e GA-5-0	LI-700E Control Box Assembly Details
TA-LI700e GA-6-0	LI-700E Block Diagrams (2 sheets)
TA-LI700e GA-4-0	Rating/serial plate and its location
TA-LI700e GA-3-0	Sealing of A/D assembly in control box
LI-700e UM-01	LI-700E User Manual (Issue 1)
LI-700e SM-01	LI-700E Service Manual (Issue 1)

4.3 Software

The software version number is 2.xx.xx.xxxx which is displayed during the power-up sequence of the instrument. The legal metrological code is contained within a dll, DPS700.dll. The dll is protected by a checksum which is also displayed during the power-up sequence. Any modification in the dll will result in a change in the checksum value and an error being detected. Access to the Windows operating system is prevented by password protection.

5 PERIPHERAL DEVICES AND INTERFACES

5.1 Interfaces

The instrument may have the following interfaces:

- USB
- Ethernet

5.2 Peripheral devices

The following peripheral devices may be connected to the interfaces provided:

- Peripheral devices that have been issued with a test certificate by a Notified Body responsible for type approval under Directive 2009/23/EC; or
- Peripheral devices without a test certificate under the following conditions:
  - it bears the CE marking for conformity to the EMC Directive;
  - it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation;

- it prints weighing results and other data as received from the weighing instrument without any modification or further processing;
- it complies with the applicable requirements of EN45501, i.e. 4.2, 4.4, 4.6 and 4.7.

A printing device may print additional information such as date or number to identify the printed weighing result(s) or sets of weighing results.

6 APPROVAL CONDITIONS

This certificate is issued subject to the following conditions:

6.1 Legends and inscriptions

6.1.1 The instrument bears the following legends on or near the display:

Max
Min
e =
T =

6.1.2 The instrument shall bear the following legends:

Class III
CE marking
Green M
Serial number
Manufacturer's mark or name
Temperature range

The markings and inscriptions shall fulfil the requirements of Paragraph 1 of Annex IV of the Directive 2009/23/EC.

6.2 The instrument shall be fitted with a level indicator or be permanently installed.

7 LOCATION OF SEALS AND VERIFICATION MARKS

7.1 The 'CE' marking, Green M and certificate number are located on the side of the control cabinet (Figure 3). The CE mark shall be impossible to remove without damaging it. The data plate shall be impossible to remove without it being destroyed.

7.2 Access to metrological settings is secured by a switch on the A/D board. The switch is protected by a metallic cover secured by a tamper-evident seal (Figure 4).

7.3 Access to the static calibration facility is password protected. The instrument increments a calibration value (audit count number) each time it is re-calibrated. The value is recorded on a tamper evident label on the outside of the metal case protecting the A/D board. The current audit count number can be displayed via the About key in the Main Menu screen. Details of the secure metrological parameters can be displayed via the "Audit Query" programme in the Windows operating screen.

7.4 Components that may not be dismantled or adjusted by the user (load cell) must be secured by a suitable mark placed over the securing screws. The securing mark may be either:

- a mark of the manufacturer and/or manufacturer's representative, or
- an official mark of a verification officer.

8 ALTERNATIVES

8.1 Having the instrument fitted with the DEL type 700 series labeller (figure 5).

8.2 Having the instrument fitted with the DEL type LC series labeller (figure 6).

8.3 Having different metrological characteristics (Max and e =) to those specified in table 4.1, provided a compatibility of modules is established.

The technical data for the compatibility of modules is as follows:

Maximum number of scale intervals	6000
Load cell excitation voltage	3.3 Vdc
Minimum load cell impedance	43 Ω
Maximum load cell impedance	1100 Ω
Minimum input voltage per verification scale interval	0.88 μV
Measuring range minimum voltage	0 mV
Measuring range maximum voltage	40 mV
Fraction of maximum permissible error	P_{ind} = 0.5
Load cell cable (from indicator to load cell junction box)	Maximum length = 1.5 m

Any compatible load cell(s) may be used providing the following conditions are met:

- There is a respective OIML Certificate of Conformity (R60) or a test certificate (EN45501) issued for the load cell by a Notified Body responsible for type examination under Directive 2009/23/EC.
- The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2, Issue 6, 2014, No 10), and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to EN45501 has been conducted on this loadcell.
- The compatibility of the load cells and indicator is established by the manufacturer by means of the compatibility of modules calculation, contained in the above WELMEC 2 document, at the time of verification or declaration of EC conformity of type.
- The loadcell transmission must conform to one of the examples shown in the WELMEC Guide 2.4, "Guide for Load cells".

8.4 The instrument may be used in "Automatic" mode, which is outside the scope of this approval. When the instrument is in "Automatic" mode it is operating as an automatic weighing instrument and so must comply with the relevant requirements of the Measuring Instruments Directive 2004/22/EC and bear the relevant conformity assessment markings. This mode of operation is fully described in EC Type Approval Certificate UK/0126/0131.

A protected parameter is set at initial verification to allow the operation in automatic mode only, automatic and manual modes, or manual mode only.

8.5 In addition to the weight and weight-price labelling modes of operation, the instrument is provided with non-weighed items (fixed price and fixed weight) and average weight modes of operation. These modes are outside the scope of this approval.

The mode of operation is set in the products' PLU, only available at supervisor level. The parameters (nominal weight and tolerance limits) used by the average weight mode are calculated by the system and cannot be modified. An average weight label contains the nominal weight with the associated units of measurement, the 'e' symbol, and a fixed price. Any pack that falls outside of the average weight limits is not labelled (i.e. rejected). The instrument is designated the CWL-700E when configured to operate only as a checkweigher.

8.6 Having a modified instrument designated the HC5600.

8.6.1 The instrument is identical in construction to the LI-700E, utilising the Tesco Counter application software. The application uses the weight information provided by the DPS700.dll software module described in section 4.3 to perform a checkweighing operation.

The metrological characteristics are as follows:

Max = 3000 g
Min = 40 g
e = 2 g

8.6.2 Operation

In the "Average Weigh (NAWI)" mode (Figure 7a) and "Speciality Weigh (NAWI)" mode (Figure 7b), the instrument determines whether the load manually placed on the platform is within the preset minimum weight for the selected product and displays the result ("Acceptable" or ""Underweight Product", Figures 7c & 7d). The operator is then prompted to accept the result before another item can be processed.

No label is generated if the load is not acceptable; if the load is not acceptable the instrument goes into "Reweigh" mode. In this mode all batch items are required to be processed (as opposed to batch sample only in Average Weigh (NAWI) and Speciality Weigh (NAWI) modes). The instrument determines whether the load manually placed on the platform is within the pre-set minimum weight for the selected product and displays the result ("Acceptable" or ""Underweight", Figure 7e). For rejected items a label is printed ("Waste not for sale" or similar).

The instrument logs the batch results in encrypted files and can also generate batch report. An example of report is shown in Figure 8.

Note: The Tesco Counter application includes other modes of operation ("Check Weigh (AWI)", "Label Only", "Average Weight (AWI)") which are not covered under this certificate (automatic weighing modes of operation). Each mode in operation is clearly identified on the user interface (bottom right corner).

8.6.3 Software information

The following legally relevant modules are identified by their respective designation and checksum values:

DPS700.dll	0D37
Secure.Scale.Module/dll	73954ba292858692bd28349bf20cda33e6a26a

The Tesco Counter application software is held as an executable file and as such cannot be modified by the user; its version number shall be 3.2.1.

This information can be displayed by selecting Menu > About from the operating menu (Figure 9). Selecting the "print checksums" button produces the printout shown in Figure 10.

8.7 Having a modified software, designated World View (Figure 11).

The legally relevant software is contained within two dll files, identified as follows in the “About” screen:

HeaderDisplay.dll	Version 1.0.0.10
DPS710.dll	Version 1.0.0.29

The dll files can only be accessed and modified via the secured switch on the A/D board. The files are protected by a checksum, any modification in the dll files will result in a change in the checksum value and an error being detected.

Access to the Windows operating system is password-protected; the weighing mode is inactive when accessed.

8.8 Having the Aplex Technology combined PC and LCD display type AHM-6127A (see section 2.2) replaced by the Aplex combined PC and LCD display type ARCHMI-812(P).

8.9 Having the World View software described in section 8.7 modified to add bakery functionality. The software information is as per section 8.7.

The operation is as follows:

In the “Manual Mode (NAWI)” and “Speciality Mode (NAWI)”, the instrument determines whether the load manually placed on the platform is within the preset minimum weight for the selected product and displays the result (“Acceptable” or ”Item is under weight ”, Figures. The operator is then prompted to accept the result before another item can be processed.

In the “Manual Mode (NAWI)” no label is generated if the load is acceptable; if the load is not acceptable the instrument goes into “Reweigh” mode. In this mode all batch items are required to be processed (as opposed to batch sample only in “Manual Mode (NAWI)” and Speciality Mode (NAWI)”). The instrument determines whether the load manually placed on the platform is within the pre-set minimum weight for the selected product and displays the result (“Acceptable” or “”Item is under weight”). For rejected items a label is printed (“Product not for resale” or similar).

The instrument logs the batch results in encrypted files and can also generate batch report. An example of report is shown in Figure 12.

Note: The application includes other modes of operation (“Check Weigh (AWI)”, “Label Only”, “Average Weight (AWI)”) which are not covered under this certificate (automatic weighing modes of operation). Each mode in operation is clearly identified on the user interface (bottom right corner).

8.10 Having the markings specified in section 6.1.2 modified to reflect the requirements of Directive 2014/31/EU (applicable from 20 April 2016):

- The “Green M” shall be replaced by the supplementary metrology marking consisting of the capital letter “M” and the last two digits of the year of its affixing, surrounded by a rectangle. The height of the rectangle shall be equal to the height of the CE marking. The supplementary metrology marking shall immediately follow the CE marking.

- The markings must include the manufacturer’s postal address. The address shall indicate a single point at which the manufacturer can be contacted. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

9 ILLUSTRATIONS

Figure 1 LI-700E (3 conveyors)
Figure 2 Operation touch screen display
Figure 3 Rating plate
Figure 4 Cal/setup switch cover and sealing
Figure 5 DEL type 700 series labeller
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Figure 7b Tesco Counter – Speciality Weight Mode (NAWI) operating
Figure 7c Tesco Counter – Acceptable
Figure 7d Tesco Counter – Underweight Product Detected
Figure 7e Tesco Counter – Rejected
Figure 8 Example of batch report
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Figure 12 World View batch report (bakery functionality)

CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK 2930	08 August 2012	Type approval first issued.
UK 2930 revision 1	06 June 2014	Section 8.6 added.
UK 2930 revision 2	16 February 2015	Section 8.7 added.
UK 2930 revision 3	03 August 2015	Section 8.8 added.
UK 2930 revision 4	03 September 2015	Correction: Direct sales to the public removed from section 8.7. Sections 8.9 and 8.10 added.

Figure 1 LI-700E (3 conveyors)

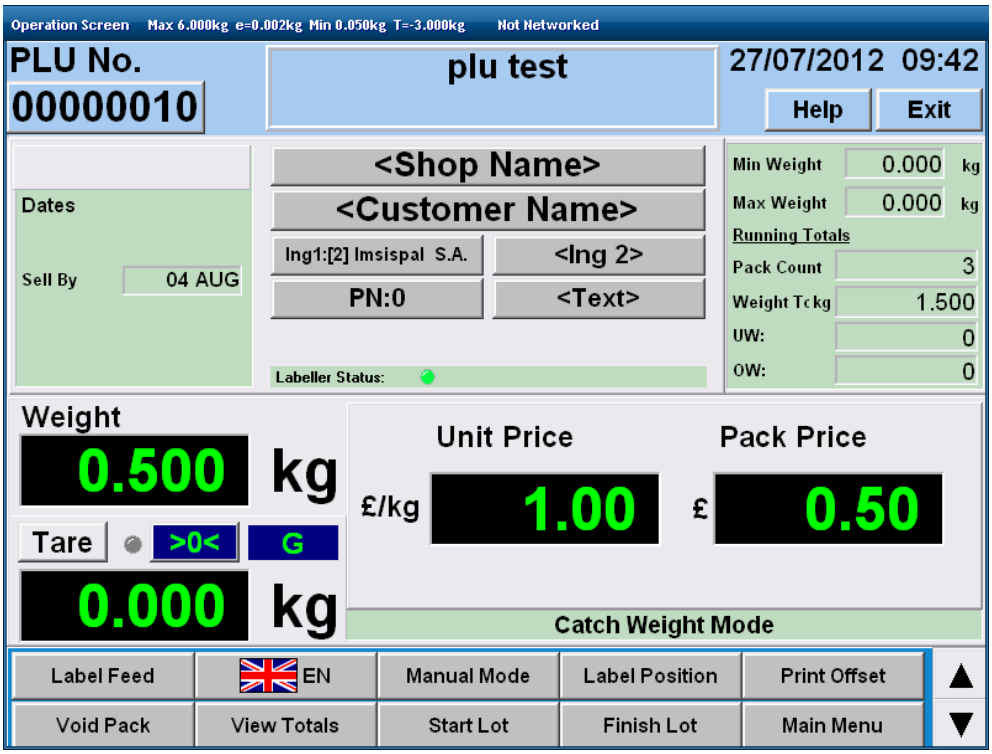


Figure 2 Operation touch screen display

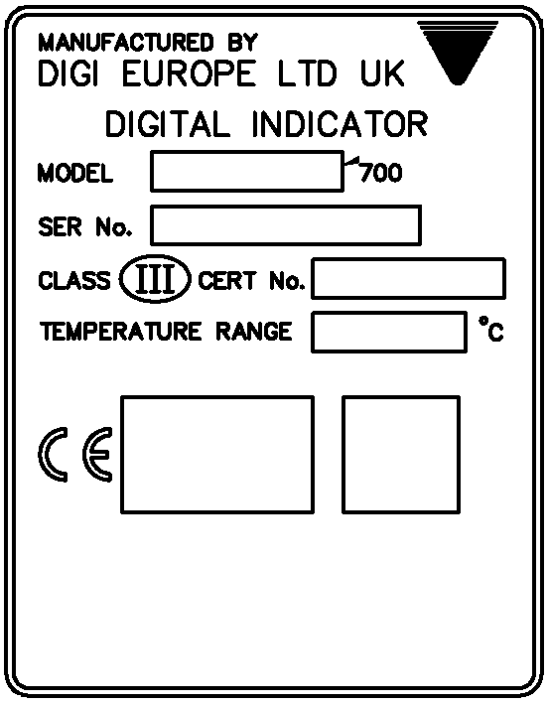


Figure 3 Rating plate

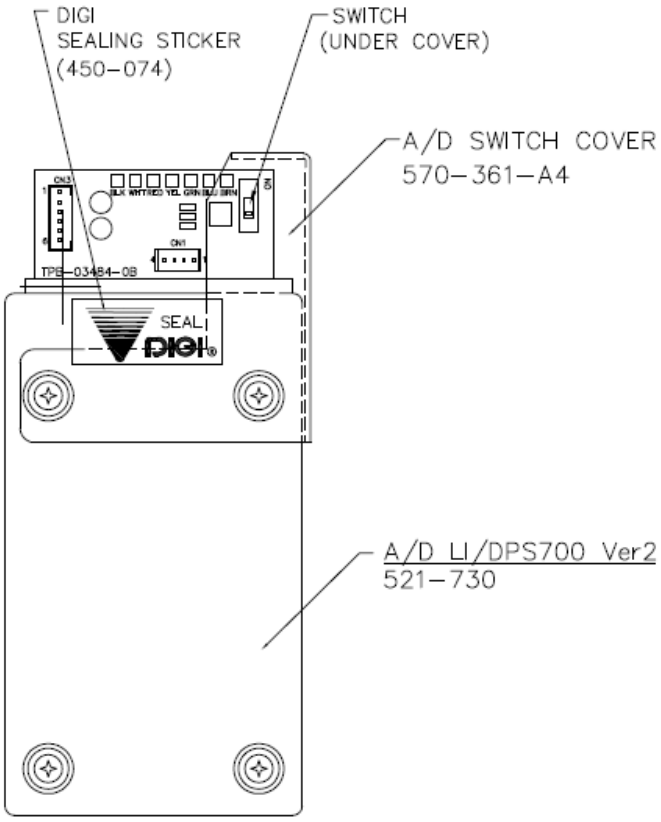


Figure 4 Cal/setup switch cover and sealing

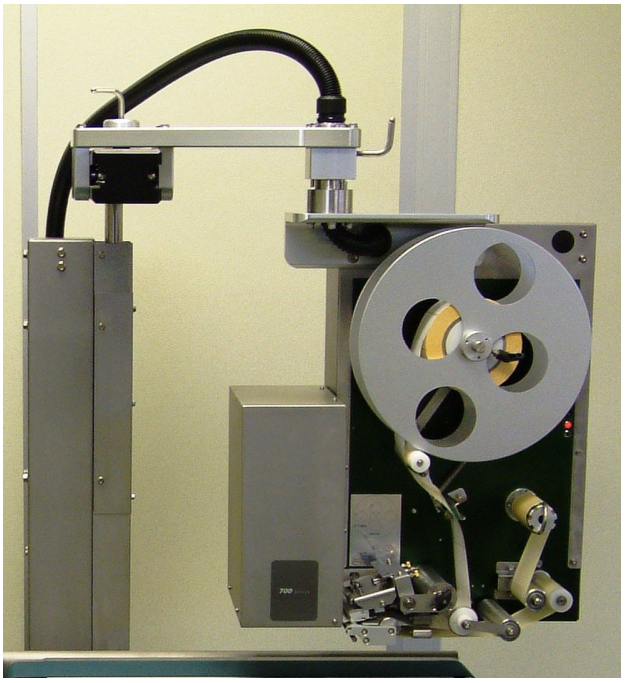


Figure 5 Alternative Printer AP-700 UB

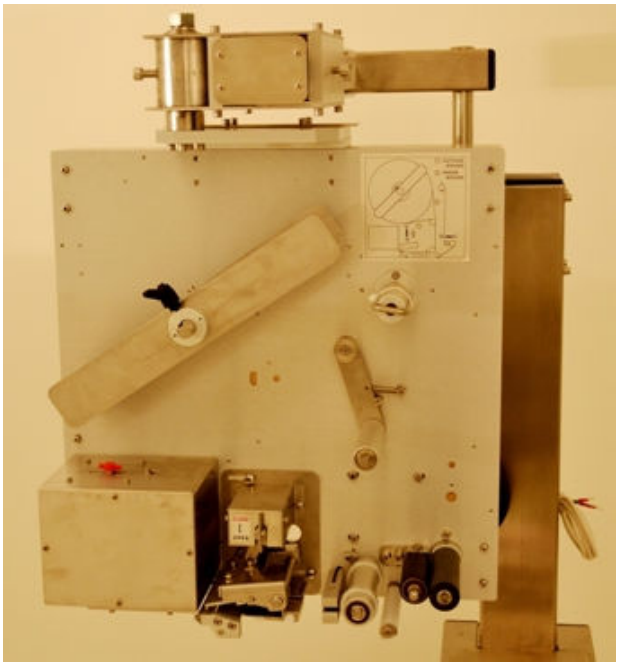


Figure 6 DEL type LC series labeller

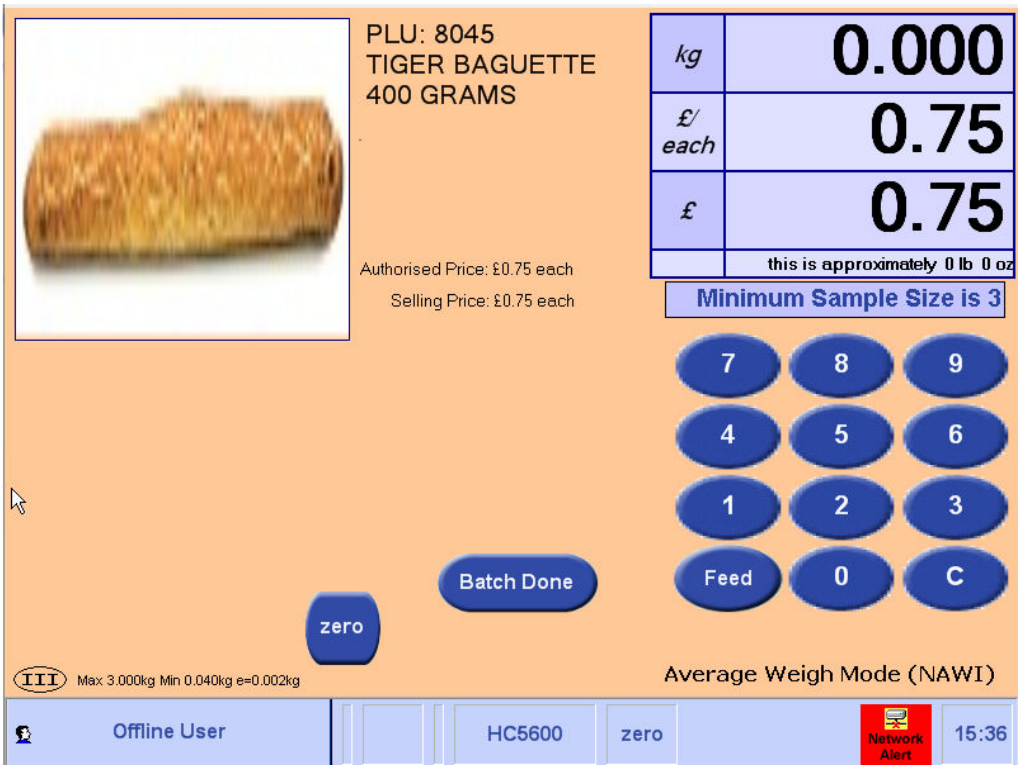


Figure 7a Tesco Counter - Average Weight Mode (NAWI) operating screen

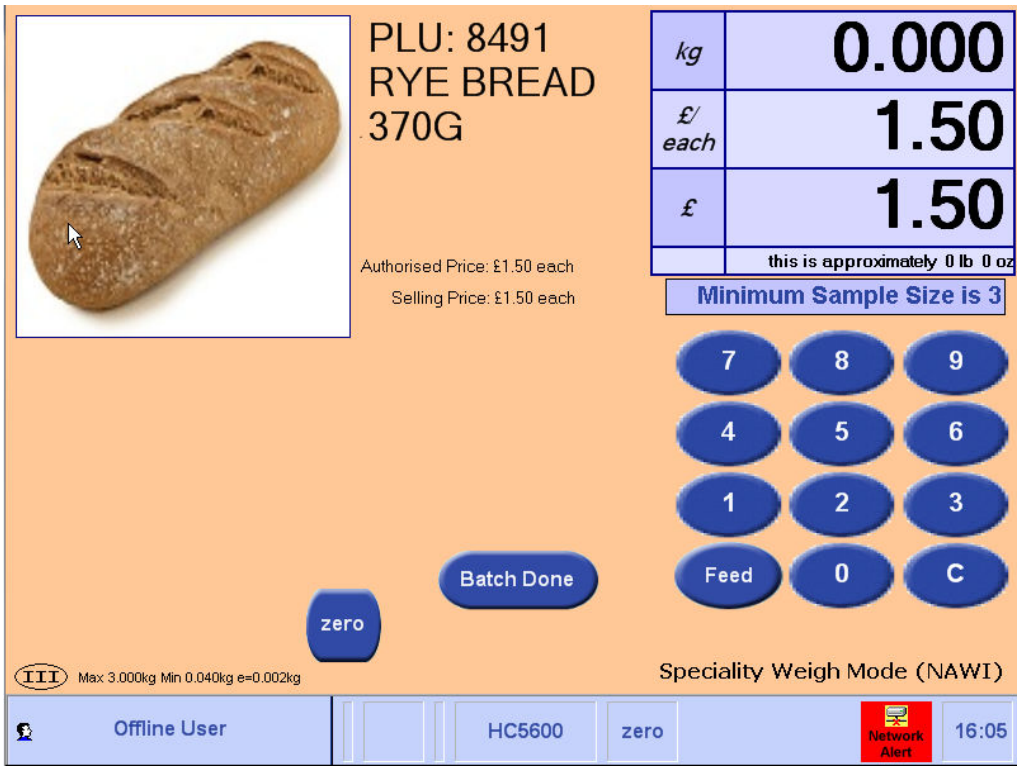


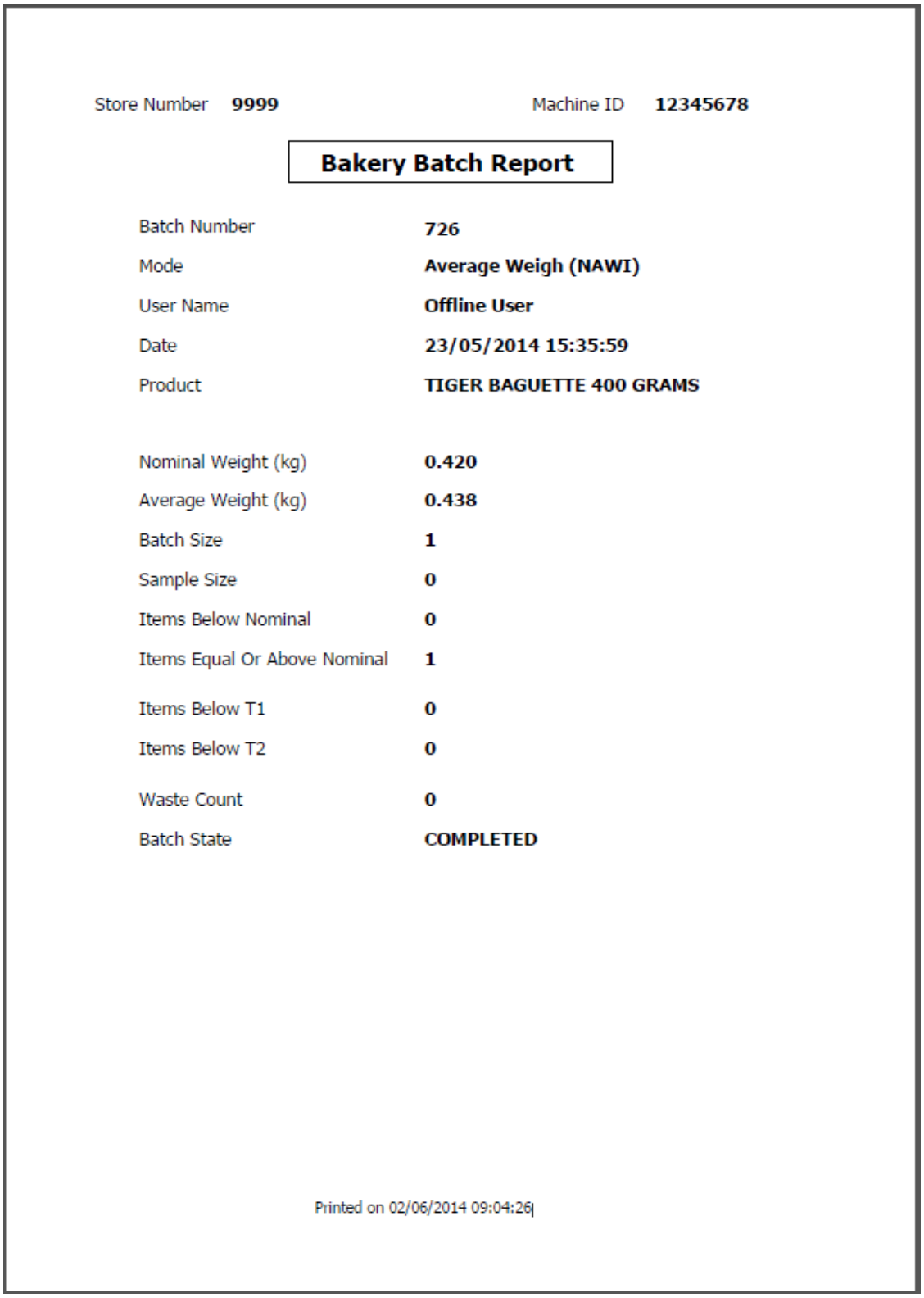
Figure 7b Tesco Counter – Speciality Weight Mode (NAWI) operating screen

Figure 7c Tesco Counter – Acceptable

Underweight Product
ALL of remaining batch must be weighed
Labels printed at the end of the batch for
acceptable products
ok

Figure 7d Tesco Counter – Underweight Product Detected

Figure 7e Tesco Counter – Rejected



Store Number **9999** Machine ID **12345678**

Bakery Batch Report

Batch Number	**726**
Mode	**Average Weigh (NAWI)**
User Name	**Offline User**
Date	**23/05/2014 15:35:59**
Product	**TIGER BAGUETTE 400 GRAMS**
Nominal Weight (kg)	**0.420**
Average Weight (kg)	**0.438**
Batch Size	**1**
Sample Size	**0**
Items Below Nominal	**0**
Items Equal Or Above Nominal	**1**
Items Below T1	**0**
Items Below T2	**0**
Waste Count	**0**
Batch State	**COMPLETED**

Printed on 02/06/2014 09:04:26

Figure 8 Example of batch report

Figure 9 Software information display

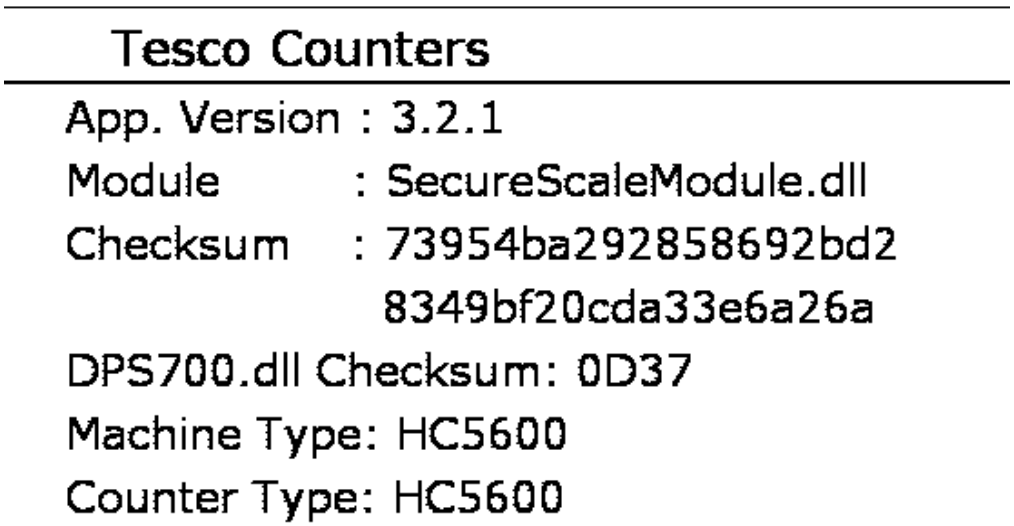


Figure 10 Software information printout

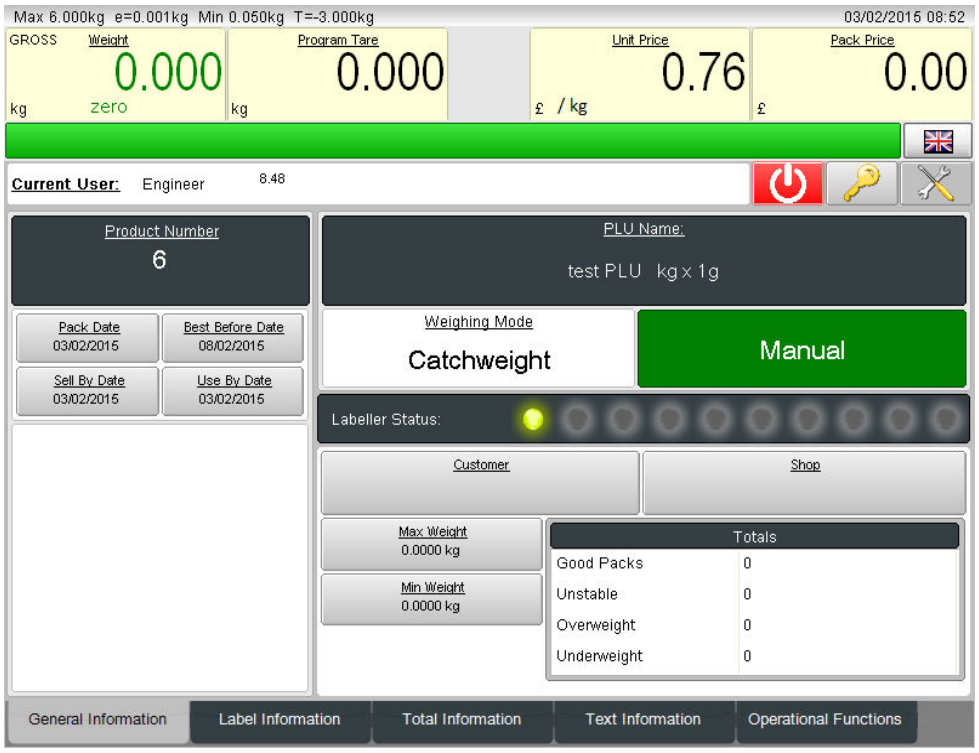


Figure 11 World View operating screen

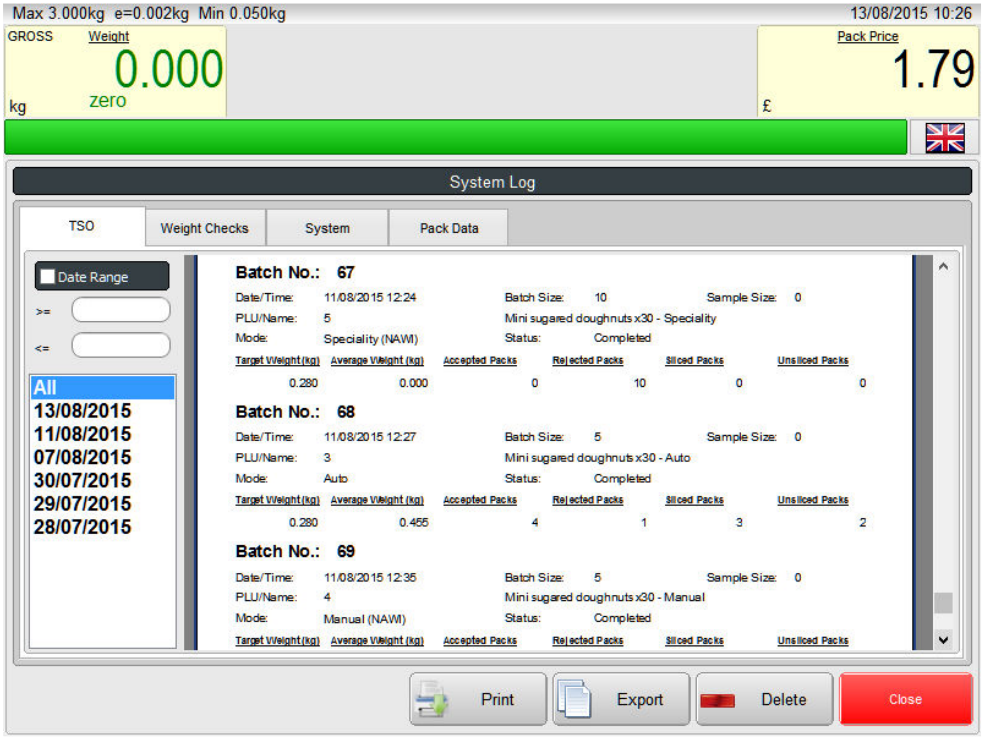


Figure 12 World View batch report (bakery functionality)

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